CORNELL UNIVERSITY
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Volume XVIII Number 3

Announcement of
Winter Courses

New York State
College of Agriculture

1926-27

Ithaca, New York
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September 1, 1926

CALENDAR, 1926–27

Nov. 3	Wednesday,	Registration in winter courses, beginning at 9 a. m., at the office of the Secretary, Roberts Hall.
Nov. 4	Thursday,	Instruction begins in winter courses.
Nov. 15	Monday,	Fee cards issued at office of the Secretary.
Nov. 20	Saturday,	Last day for payment of fees at office of the University Treasurer, Morrill Hall.
Nov. 25	Thursday,	Thanksgiving Day. Holiday.
Dec. 22	Wednesday, 1 p.m.	Instruction ends. Christmas recess.
Jan. 5	Wednesday, 1 p.m.	Instruction resumed.
Feb. 7–12	Friday,	Twentieth Annual Farmers' Week.
Feb. 11	Friday,	Instruction ends in winter courses.

NEW YORK STATE COLLEGE OF AGRICULTURE

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Montgomery Robinson, Litt.B., B.S., Professor in Extension Service.
Arthur John Heinicke, Ph.D., Professor of Pomology.
Edward Gardner Misner, Ph.D., Professor of Farm Management.
William Irving Myers, Ph.D., Professor of Farm Finance.
Theodore Hildreth Eaton, Ph.D., Professor of Rural Education.
Walter Warner Fisk, M.S. in Agr., Professor of Dairy Industry.*
James Duncan Brew, M.S., Extension Professor of Dairy Industry.
Doak Bain Carrick, Ph.D., Professor of Pomology.
Lester Wayland Sharp, Ph.D., Professor of Botany.
Joseph Oskamp, B.S. in Agr., Extension Professor of Pomology.
Hugh Daniel Reed, Ph.D., Professor of Zoology.
Harry Morton Fitzpatrick, Ph.D., Professor of Plant Pathology.
Otis Freeman Curtis, Ph.D., Professor of Botany.* (Exchange Professor at University of Leeds, 1926–27.)
Louis Melville Massey, Ph.D., Professor of Plant Pathology.
Axel Ferdinand Gustafson, Ph.D., Extension Professor of Soil Technology.
E. Laurence Palmer, Ph.D., Professor of Rural Education.
Philip Henry Wessels, M.S., Research Professor of Vegetable Gardening.
Frank Ashmore Pearson, Ph.D., Professor of Marketing.
Robert Matheson, Ph.D., Professor of Economic Entomology.
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Gustave Frederick Heuser, Ph.D., Professor of Poultry Husbandry.
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Bruce Lee Melvin, M.S., Ph.D., Acting Professor of Rural Social Organization.
Ralph Almon Felton, Ph.B., M.A., Extension Professor of Rural Social Organization.

*Absent on leave.

James Morgan Sherman, M.S., Ph.D., Professor of Dairy Industry.
Frank Pores Bussell, Ph.D., Professor of Plant Breeding.
Arno Herbert Nehrling, Professor of Floriculture.
Richard Alan Mordoff, Ph.D., Professor of Meteorology.
Everett Franklin Phillips, A.B., Ph.D., Professor of Apiculture.
Paul Francis Sharp, Ph.D., Professor of Dairy Chemistry.
Arthur Augustus Allen, Ph.D., Professor of Ornithology.
Alpheus Mansfield Goodman, B.S.A., Extension Professor of Rural Engineering.
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Loren Clifford Petry, Ph.D., Professor of Botany.
Clyde B. Moore, Ph.D., Professor of Rural Education.
Harold Eugene Botsford, B.S., Extension Professor of Poultry Husbandry.
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Emma Conley, A.B., Acting Professor of Rural Education.
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Harry Albert Ross, Ph.D., Professor of Marketing.
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Earle Volcart Hardenburg, Ph.D., Assistant Professor of Vegetable Gardening.
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Charles Arthur Taylor, Assistant County Agent Leader.
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Earl Alvah Flansburgh, B.S., Assistant County Agent Leader.
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Thomas Joseph McInerney, M.S. in Agr., Assistant Professor of Dairy Industry.
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Roy Glenn Wiggans, Ph.D., Assistant Professor of Plant Breeding.
Charles Chupp, Ph.D., Extension Assistant Professor of Plant Pathology.
Benjamin Dunbar Wilson, Ph.D., Assistant Professor of Soil Technology.
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Frank Latta Fairbanks, M.E., Assistant Professor of Rural Engineering.
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Robert Byron Hinman, M.S., Assistant Professor of Animal Husbandry.
Walter H. Burkholder, Ph.D., Assistant Professor of Plant Pathology.
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Herbert John Metzger, D.V.M., Extension Assistant Professor of Animal Husbandry.
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Leo Chandler Norris, Ph.D., Assistant Professor of Poultry Husbandry.
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Donald Stuart Welch, Ph.D., Assistant Professor of Plant Pathology.
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Edwin Fraser Hopkins, Ph.D., Assistant Professor of Botany.
Myron Slade Kendrick, Ph.D., Assistant Professor of Rural Economy.
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Chester Jermain Hunn, B.S.A., Assistant Professor of Ornamental Horticulture.
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Isaac Fults Hall, B.S., Extension Assistant Professor of Farm Management.
Goldan Orlando Hall, M.S.A., Assistant Professor of Poultry Husbandry.
John Frederick Harriott, B.S., Assistant Professor of Farm Management.
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Lewis Merwin Hurd, Extension Instructor in Poultry Husbandry.
Walter Gernet Krum, Extension Instructor in Poultry Husbandry.
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Clifford Nicks Stark, M.A., Instructor in Bacteriology.
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Joseph Brackin Kirkland, B.S., Instructor in Extension Service.

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Arthur Lewis Pierstorff, A.B., Extension Instructor in Plant Pathology.
Norman Leon Cutler, B.A., Instructor in Entomology.
James Whaples Sinden, A.B., Instructor in Plant Pathology.
George Bentley Webber, B.S., Instructor in Meteorology.
Paul Robert Needham, M.S., Instructor in Limnology.
John Peter Willman, M.S., Extension Instructor in Animal Husbandry.
Lillian Aline Phelps, M.A., Instructor in Zoology.
Robert Grove Maxwell, B.S., Instructor in Animal Husbandry.
Ralph Dobbin Reid, B.S., Instructor in Farm Management.
Erwin Graue, B.S., Instructor in Rural Economy.
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George Samuel Butts, B.S., Supervisor of Study Courses.
Isabelle Frisbie Bull, B.S., Instructor in Rural Education.
Russell Palmer Hunter, A.M., Instructor in Zoology.
Nathaniel Chadwick, B.S., Instructor in Rural Engineering.
Roland Franklin Bucknam, B.S., Extension Instructor in Farm Management.
Robert Page Myers, B.S., Instructor in Dairy Industry.
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Maurice Chester Bond, B.S.A., Instructor in Marketing.
George Monroe Bateman, M.S., Instructor in Dairy Chemistry.
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Paul Rufus Burkholder, A.B., Instructor in Botany.
Rupert Alonzo McGinty, B.S., A.M., Instructor in Vegetable Gardening.
Mabel Agnes Hastie, B.S., Instructor in Rural Education.
Howard James Stover, B.S., Instructor in Marketing.
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Emma Davis, Instructor in Rural Education.
Albert Oliver Rhoad, B.S., Instructor in Animal Husbandry.
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Dewey Stewart, M.S., Instructor in Plant Pathology.
Raymond Clayton Bender, M.S., Instructor in Animal Husbandry.
Walter Hachstrasser, Instructor in Dairy Industry.
William Thomas Craig, Assistant in Cereal Investigations.
Walton Isaac Fisher, Assistant in Plant Breeding Investigations.
Stewart Henry Burnham, B.S., Assistant Curator in Botany.
Cecil D. Schutt, Assistant in Animal Husbandry.
Leah English, B.S., Analyst in Agronomy.
Samuel Eugene Alan McCallan, B.S.A., Assistant in Plant Pathology.
Virgil Norman Argo, B.S., Assistant in Biology.
Barbara McClintock, B.S., M.A., Assistant in Botany.
Chester Arthur Arnold, B.S., Assistant in Botany.
Robert Goldin, B.S., Assistant in Botany.
James Elwood Davis, B.S., Extension Assistant in Forestry.
Cyrus Benjamin Butler, Assistant in Aquiculture.
John Lupton Mecartney, B.S., Assistant in Pomology.
Harold Barrows Riley, M.S., Assistant in Agronomy.
Juan de Guzman Rodriguez, B.S., Assistant in Plant Breeding.
Everett Oertel, B.S., Assistant in Apiculture.
Gemma Jackson, B.A., Assistant in Botany.
Carl Edward Frederick Guterman, B.S., Assistant in Plant Pathology.
Kenneth Gordon, M.A., Assistant in Biology.
Sid Robinson, B.S., Assistant in Entomology.
George Edward Romaine Hervey, B.S.A., Assistant in Entomology.
John Richard Greeley, A.B., Assistant in Zoology.
Neil Hotchkiss, M.S., Assistant in Botany.

Richard August Laubengayer, B.S., Assistant in Botany.
Dale Edmund Thomas, M.S., Assistant in Botany.
Robert Daniel Harwood, A.B., Assistant in Biology.
James Gordon Horsfall, B.S., Assistant in Plant Pathology.
Troy Mausell Currence, M.S.A., Assistant in Vegetable Gardening.
Mary Mekeel, Assistant in Zoology.
George Raymond Hanselman, M.E., Assistant in Rural Engineering.
Mrs. Hulda Hultzen Greeley, B.S., Assistant in Zoology.
Alan Stone, B.S., Assistant in Parasitology.
Frank Chittenden Fletcher, A.B., Assistant in Entomology.
John Edward Aughanbaugh, B.S., Assistant in Forestry.
Walter Wentworth Wiggin, B.S., Assistant in Vegetable Gardening.
George Wells Beadle, M.S., Assistant in Agronomy.
Raymond Earl Wakeley, M.S., Assistant in Rural Social Organization.
Austin Horatio Wilkins, B.S., Assistant in Forestry.
Bernard Frank, B.S., Assistant in Forestry.
Grace Agnes Peterson, B.S., Assistant in Plant Pathology.
Alexis Lawrence Romanoff, B.S., Assistant in Poultry Husbandry.
Dean Richmond Marble, B.S., Assistant in Poultry Husbandry.
Edwin Shepherd Harrison, B.S., Assistant in Animal Husbandry.
Louis Charles Schultz, B.S., Assistant in Botany.

NEW YORK STATE COLLGE OF AGRICULTURE

THE WINTER COURSES

All the winter courses will begin on November 3, 1926, and will close on February 11, 1927. Instruction will begin at 8 a. m. on November 4. No work will be given on Thanksgiving Day; and none will be given from December 22, at 1 p. m., to January 5, at 1 p. m., these days being allowed for Christmas recess.

Correspondence concerning these courses and other instruction in the College of Agriculture may be addressed to The Secretary, College of Agriculture, Cornell University, Ithaca, New York.

The winter courses have been part of the regular work of the College of Agriculture since 1893, when a general course was established. Certain lines of work soon became grouped into more or less fixed professional courses for persons desiring to specialize in these fields. As a result, there are now six courses listed:

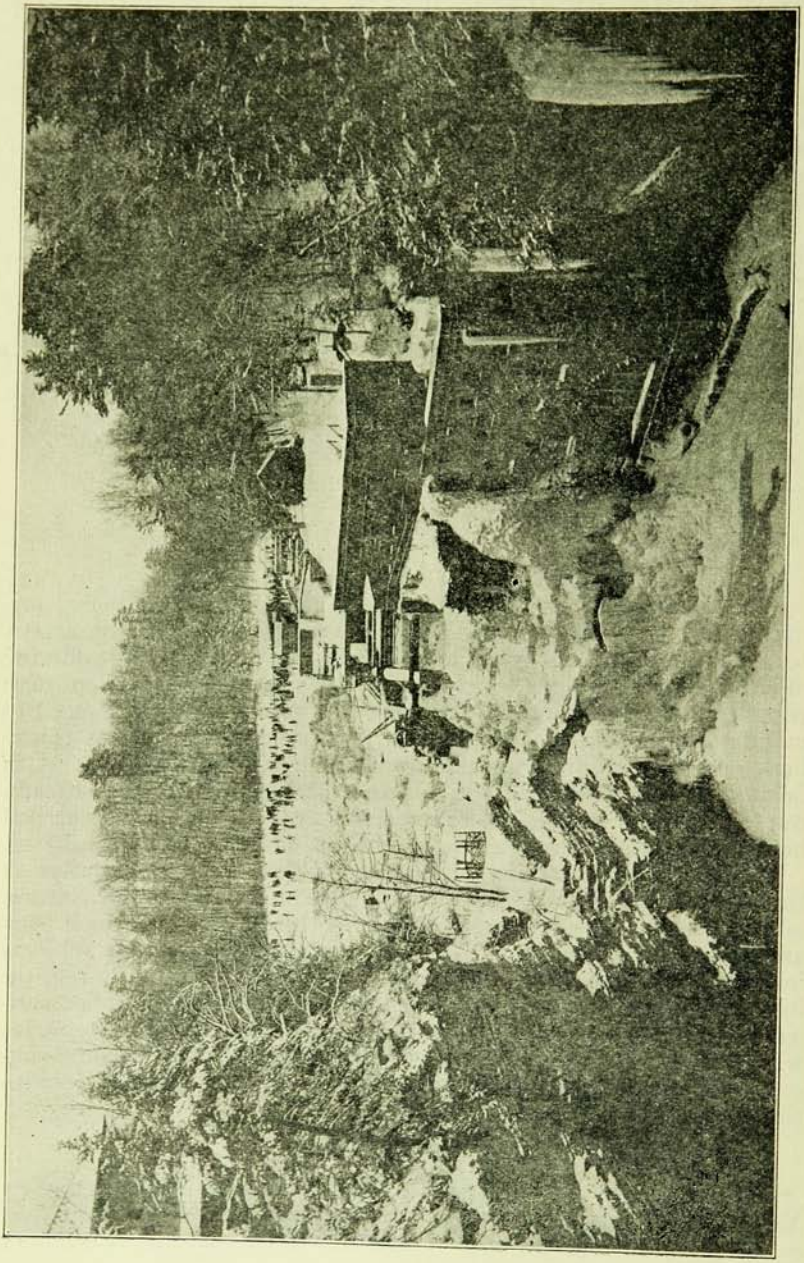
1. General Agriculture.
2. Dairy Industry.
3. Poultry Husbandry
4. Fruit Growing
5. Flower Growing
6. Vegetable Gardening.

What is listed as the course in general agriculture is intended primarily for those who are engaged in general farming or who expect to take up farming. It is not a fixed curriculum; it is a large offering of elective units of work (pages 17–23) out of which the student may choose the combination most suited to his needs, with due regard to making a workable time schedule. The professional courses (numbers 2–6) are combinations arranged for those specializing in certain fairly well defined lines of agriculture. The student is asked to submit his choice of studies before the courses open, and after his arrival he may discuss any remaining problems with his faculty adviser.

It is advised that students plan to spend at least two winters at the College, in the first winter taking general courses in agriculture, and in the second winter specializing in the subjects in which they are particularly interested. The large number of elective subjects in the course in agriculture makes it possible for students to register in that course for several years without duplication of specified subjects of study. Even those planning to take the professional courses will do well to take preliminary work in general agriculture, and suggestions toward this end will be found in connection with the description of some of the special courses.

EXPENSES

Tuition is free to those who are and have been residents of New York State for one year previous to registration. Nonresidents pay a tuition fee of $25. In case of withdrawal for reasons satisfactory



THE UNIVERSITY HYDRAULIC LABORATORY, TRIPHAMMER FALLS, AND BEEBE LAKE

to the Comptroller and the Registrar of the University, which reasons should be stated in writing, a student may have a refund of a portion of any tuition paid by him; in such case he is charged ten per cent of the term's tuition for each week or fraction thereof between the first registration day and the date of his certificate of withdrawal as issued by the College.

There are a number of fees and incidental expenses, which are detailed under the description of each course, but practically the only large expense is the cost of living in Ithaca and railroad fare to and from Ithaca. Satisfactory table board can be procured in Ithaca, within five to fifteen minutes walk of the campus, for from $7 to $9 a week. Comfortable rooms near the place of boarding may be engaged at about $3.50 a week for each person when two persons occupy the same room, and from $4 to $5 when one person occupies the room. The cost of books need not be more than $10, but it has been the experience of winter-course students in the past that they wish to buy a number of books to take home, and it would be well, if possible, to allow at least $15 for this item. Statements made by students in previous years show that $225 or $250 is a reasonable amount to allow for total expense exclusive of clothes and travel. By careful management this may be reduced somewhat; but it is best not to stint too much, since too great economy is likely to lessen the value of the course.

The laboratory fees and the expenses of observation trips are mentioned in the descriptions of the courses in the announcement; students are also liable for breakage due to carelessness on their part.

Infirmary Fee. Students in the winter courses are required to pay an infirmary fee of $3. In return for the infirmary fee, any sick student is, on his physician's certificate, admitted to the infirmary, and is given, without further charge, a bed in a ward, board, and ordinary nursing, for a period not exceeding two weeks. Extra charges are made for private rooms, special food, and special nurses. If a sick student who has not received two weeks service during the course is unable to gain admittance to the infirmary, by reason of lack of accomodation, he is entitled to a refund of the fee. The infirmary has no medical staff; students employ their own physicians among practitioners in Ithaca or elsewhere.

A Willard Straight Hall Membership Fee of $3 is required, at the beginning of the term, of every winter-course student. Its payment entitles the student to a share in the common privileges afforded by the operation of Willard Straight Hall, subject to regulations approved by the Board of Managers of the Hall.

Fee Cards. All the winter-course students must call at the office of the Secretary of the College of Agriculture on November 15, at which time the fee cards will be issued with tuition fee, infirmary fee, and laboratory fees charged. The cards must be presented at the Treasurer's office in Morrill Hall and payment made not later than 1 p. m., Saturday, November 20.

SELF-SUPPORT. In the past, a few students have been obliged to earn money during the course. This is never advisable unless absolutely necessary. It is much better to borrow the necessary money or to postpone the course of study until another year than to be thus handicapped during the limited time spent at the University. All energy should be concentrated on the work of the course.

SCHOLARSHIPS AND PRIZES

BEATTY AGRICULTURAL SCHOLARSHIPS. By the will of the late Harrison L. Beatty of Bainbridge, New York, the income of about $5900 is devoted to three equal scholarships in the winter courses to be known as the Beatty Agricultural Scholarships. For the session of 1926–27 three scholarships of $100 each are available. These scholarships are to be awarded to residents of Chenango County, one of whom shall be a resident of the town of Bainbridge. In making the award, equal consideration will be given to education and practical experience. Competitive examinations are held annually in Norwich and Bainbridge, New York, in the last week of September; the exact dates are to be announced to those applying for the examinations. The applications must be sent to the Secretary of the College of Agriculture, Ithaca, New York, by September 1.

THE JEWISH AGRICULTURAL SOCIETY of New York instituted, in 1908, a system of free scholarships to enable the children of Jewish farmers to attend the short winter courses offered by the agricultural colleges in the States in which they reside. The scholarships are awarded by competition, which consists in the writing of a brief essay on an agricultural topic. Children of Jewish farmers living and working on the farms of their parents are eligible to compete for these scholarships. The number of scholarships is not limited. For the New York State College of Agriculture at Cornell University, a number of these scholarships have been awarded each year since their establishment. Application should be made to the Jewish Agricultural Society, 174 Second Avenue, New York City.

INDIAN SCHOLARSHIPS. A limited number of scholarships are offered to Iroquois Indians. For particulars, apply to the Indian Agricultural Society of your reservation, or to the Indian Extension Staff, College of Agriculture, Ithaca, New York.

PRIZES. The various winter-course clubs compete every year for the Morrison Trophy Cup, the contest ordinarily being a series of debates. There is also a silver cup offered by Mrs. Florence M. Nevin as a prize for proficiency in public speaking.

ADMISSION

A satisfactory certificate of vaccination will be required of winter-course students, since by action of the Board of Trustees of Cornell University such a certificate is required of every student matriculating in the University after August 31, 1925.

The winter courses are business and occupational courses, not academic; hence there are no examinations for admission. However, in order that the student may be able to make the best use of the instruction it is necessary that he should have had a good common-school education. Winter-course students are sometimes seriously handicapped in their work by being deficient in arithmetic and in English. Persons who are planning to take a winter course are advised to review these subjects before coming to Ithaca.

Applicants for admission to the winter courses should, by way of preparation, read carefully some of the best books, bulletins, and other literature on the subject to which their attention will be chiefly directed while at Cornell University.

Women who expect to attend one of the winter courses should correspond with the office of the Dean of Women, Ithaca, New York, in regard to rooms and accommodations. All women students registered in any of the winter courses are under the supervision of the Dean of Women during the period of the courses.

AGE. All the courses are open to both men and women of at least eighteen years of age. There is no limit to the age above eighteen; some of the best winter-course students have been mature men and women, owners of farms or managers of dairy or poultry plants.

APPLICATION. This circular contains an application blank for admission to the winter courses and a schedule sheet for courses to be taken. Both of these should be made out in full and forwarded to the Secretary at once by any person who is considering, even though indefinitely, attending any one of the winter courses. The filing of an application for admission does not constitute an obligation to attend, and applications may be withdrawn at any time.

Any one who has graduated from the common schools of the State, or who has an eighth-grade certificate, should be able to do the winter-course work satisfactorily. When making application, candidates for admission should give a description of their school training and, if possible, should send a certificate or a statement from the teacher of the school last attended.

Applicants for the professional course in poultry husbandry must have had at least six months active and consecutive work on an approved farm or poultry plant. A statement signed by the employer, stating the kind, amount, and quality of work done, must accompany the application for admission.

ARRIVAL AT ITHACA. Students who desire advice concerning lodgings and boarding places are invited to come directly to the College of Agriculture on their arrival in Ithaca. It is desirable that all housing arrangements should be completed before registration day.

REGISTRATION

On Wednesday, November 3, beginning at 9 a. m., all students must report for registration at the office of the Secretary of the College of Agriculture, Roberts Hall. After registering here, stu-

dents will go at once to the headquarters of their particular winter course or to their faculty supervisor, as assigned. The headquarters of the several professional winter courses are as follows:

Course in dairy industry, Dairy Building, department office; course in poultry husbandry, Poultry Building, room 325 (third floor); course in fruit growing, East Roberts, room 109 (first floor); course in flower growing, Roberts Hall, room 222 (second floor); course in vegetable gardening, Poultry Building, room 253 (second floor). Students in the course in agriculture will be assigned to their faculty supervisors at the time of their registration.

STUDY CARDS. After the student has registered he may not change his schedule of courses in any respect, except on the recommendation of the head of the winter course concerned or of his faculty supervisor, and with the approval of the Secretary. The schedule sheet, which the applicant fills out in advance, may subsequently be changed at the request of the applicant, and is not to be confused with the study card, which is made out when the student registers.

METHODS OF INSTRUCTION

Instruction in the winter courses is given by lectures, by such practical work (laboratory practice) in the various agricultural operations as can be conducted at that time of the year, and sometimes by trips or excursions to points of special interest.

THE LECTURES are given in large part by the regular staff of the College of Agriculture. So far as possible, collected material is used for illustrating the subjects; when this is impossible, lantern views are often used. Free discussion by the students of the subject under consideration is encouraged. Further opportunity for general discussions is afforded in the meetings of the winter-course clubs.

The winter-course students are welcomed at the various addresses given by eminent men before the University in general.

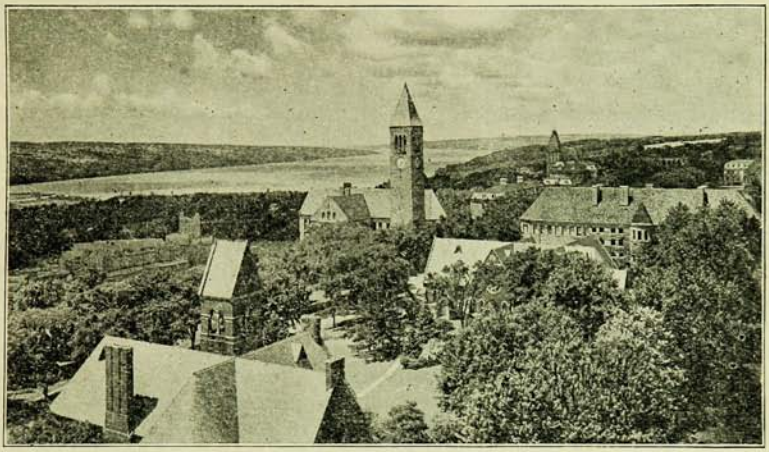
PRACTICAL WORK is made a special feature in the winter courses. The student is expected to perform all the various operations as carefully as if he were working at home as a practical farmer. In the courses in dairy industry and poultry husbandry, the instruction is in large part practical, and the students have an opportunity of becoming familiar with all the essential operations in these enterprises. In the courses in agriculture, fruit growing, flower growing, and vegetable gardening, there is necessarily a smaller amount of practical work; advantage is taken, however, of the greenhouses, the barns, and the laboratories, in demonstrating to the students some of the operations that would naturally be conducted in the summer season. Whenever possible, the aim is to make the practical work take up as large a part of the student's time as do the lectures.

EXCURSIONS to points of special interest have been made a feature of the course in poultry husbandry. Such excursions are conducted in other courses also whenever practicable.

The word *hour* in the following schedules means one lecture of one hour each week, or one period of two and one-half hours of laboratory or practice each week during the term.

CERTIFICATES

Students who complete a schedule of at least fifteen hours with grades of D or better will be given certificates of record. Students desiring such certificates must notify the Secretary's office before the close of the course.



THE UNIVERSITY IS ON A PLATEAU ABOUT 400 FEET ABOVE CAYUGA LAKE

THE CITY AND THE UNIVERSITY

Ithaca is situated in Tompkins County, at the head of Cayuga Lake. It is a city of about seventeen thousand inhabitants. It is reached by the Lehigh Valley and the Delaware, Lackawanna and Western Railroads. There are, in addition, auto bus lines between Ithaca and Syracuse, Auburn, Elmira, and other neighboring cities. The University stands on a plateau about four hundred feet above the lake. The officers of instruction and administration at Cornell University number nearly eight hundred. The campus and farms cover 1436 acres.

The buildings of the University are more than thirty-five in number, providing quarters for the several colleges of the University. These are Agriculture, Architecture, Arts and Sciences, Engineering, Graduate School, Law, Medicine, Veterinary Medicine, and Home Economics.

The New York State College of Agriculture at Cornell University occupies buildings erected by the State subsequent to 1904. These buildings are large and well equipped, and afford an attractive home for the College.

SOCIAL AND RELIGIOUS ADVANTAGES

Every year the students in each of the several winter courses have formed clubs. The societies meet once a week and debate subjects of special interest, discuss various problems, sing college songs and indulge in other forms of social enjoyment. Every winter-course student is urged to attend these meetings.

The winter-course students are welcomed at the meetings of the Agricultural Association, the Dairy Club, the Poultry Association, the Round-up Club, and the other organizations of students in the College. The meetings of these societies are devoted to discussions of live agricultural subjects and to the promotion of friendship among the students.

Religious services, provided for by the Dean Sage Preachership Endowment, are conducted in Sage Chapel throughout the college year, by eminent clergymen selected from the various religious denominations. These services are supplemented by the Cornell University Christian Association, a voluntary organization of students and professors formed for their own religious culture and the promotion of Christian living in the University. The Christian Association has its home in Barnes Hall. It has a permanent secretary. Several church denominations are represented at Cornell by special pastors who also serve as secretaries of the Christian Association and have offices at Barnes Hall. These, with the executive secretary and the hostess, constitute the staff of the Christian Association. The Association has a carefully selected Biblical library and comfortable reading and recreation rooms. Courses in Bible study are conducted throughout the year, and special courses are provided for students in the winter courses.

In addition to the Young Men's Christian Association there is a flourishing Young Women's Christian Association, with quarters in Barnes Hall.

The students of the University are welcomed by the numerous churches in the city of Ithaca at all their services.

POSITIONS

The College does not promise to find positions for students registered in any of its courses, but it has opportunity to recommend students for a large number of positions. Some students who have completed a winter course have obtained an increase in salary in the following season sufficient to pay the entire cost of the course. Such results, while of course not guaranteed, show that there are excellent opportunities for trained men.

A student desiring a recommendation from the College must fulfill the following conditions: (1) He must be of good character; (2) his previous record must be good; (3) his work in the winter course must be satisfactory.

In the case of the course in dairy industry, previous experience in a well-conducted dairy plant is strongly advised for those who expect the College to recommend them for positions.

In the case of the course in poultry husbandry, it is recommended that persons inexperienced in the handling of poultry spend at least a year in acquiring practical knowledge of the business before entering this course. Students who have not previously had a considerable amount of farm or poultry experience cannot, as a rule, be recommended to positions of responsibility until they have spent a season on an approved poultry farm. This is particularly true for the better positions in which managers or superintendents are wanted to take charge of poultry farms.

DESCRIPTION OF THE WINTER COURSES

1. COURSES IN AGRICULTURE

Most of the young men who come for a winter course expect to engage in general farming or hope to obtain positions as superintendents of farms on which diversified agriculture is practiced. It is for these that the general course in agriculture is especially designed. Persons who plan to specialize, and whose experience justifies it, will register in one of the professional courses or groups.

Whether or not the student plans to take one of the professional courses outlined hereinafter (pages 23–34), he is advised to attend more than one winter course and should definitely plan the work ahead for two years. Since a large number of winter-course students desire to prepare themselves to operate dairy farms, the following two-years program is suggested for them, though the second year may be modified in the light of the student's experience.

FIRST YEAR

	Hours
Agricultural Economics and Farm Management 1 (page 18)	2
Agricultural Economics and Farm Management 2 (page 18)	3
Agronomy 1 (page 18)	3
Agronomy 2 (page 18)	4
Animal Husbandry 1 (page 18)	3
Animal Husbandry 2 (page 18)	3

SECOND YEAR

	Hours
Agricultural Economics 10 (page 18)	3
Dairy Industry 8 (page 19)	4
Rural Engineering 1 (page 23)	3
Meteorology 1 (page 21)	2
Veterinary Medicine 1 (page 23)	1
Optional (chosen in line with the student's major interest)	7

Similar combinations may be made by the student himself, and the one determined upon may be submitted in his application. No student may take less than twelve or more than eighteen hours without special permission, and sixteen hours is as much as the average student can carry satisfactorily.

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

1. **Farm Records and Accounts.** Two hours a week. Lecture, W, 3. Roberts 292. Laboratory, M, 10–12.30. East Roberts 232. Assistant Professor HARRIOTT.

Farm inventories; cash accounts; income-tax reports; single-enterprise cost accounts; complete farm cost accounts; other farm records. Special emphasis is given to the interpretation of results and their application in the organization and management of farms. Laboratory fee, $2.

2. **Farm Management.** Three hours a week. Lectures, M F, 3. Roberts 292. Laboratory, S, 10–12.30. Farm Management Building 102. Mr. CALL.

Lectures, recitations, and laboratory practice. Farming as a business; types of farming; balance of business; size of business; rates of production; farm layout; building arrangement; marketing; ways of starting farming; forms of tenure and leases; choosing and buying a farm; use of capital and credit; planning, organization, and management of specific farms. Laboratory fee, $1.

10. **Marketing.** Three hours a week. Lectures, T Th, 4. Roberts 292. Laboratory, Th, 10–12.30. Marketing Building. Professor SPENCER.

The purpose of this course is to acquaint the students with the principles involved in the marketing of New York farm products. Cooperative marketing is included.

AGRONOMY

1. **Soil Fertility.** Three hours a week. Lectures, M W F, 2. One demonstration period a week, T or F, 11–1. Caldwell 100. Professors BUCKMAN and GUSTAFSON.

An elementary course dealing with those physical, chemical, and biological properties of the soil that have special practical applications. The use of lime, manures, and fertilizers will be an important phase of the work.

2. **Field Crop Production.** Four hours a week. Lectures, M W F, 8. Caldwell 143. Laboratory, Th 11–1. Caldwell 250. Assistant Professor COOPER.

A course dealing with the principal field crops grown in New York State. Cultural methods, crop rotations, fertilizer practices, soil and climatic adaptation, and the better varieties of the important crops are considered. Laboratory fee, $1.

ANIMAL HUSBANDRY

1. **Feeds and Feeding.** Three hours a week. Lectures, M W, 9. Animal Husbandry Building B. Practice, T, 11–1. Professor SAVAGE.

The principles and practices of compounding rations and of feeding farm animals.

2. **Principles of Breeding Dairy Cattle.** Three hours a week. Lectures, T Th, 9. Animal Husbandry Building A. Practice, W, 11–1. Assistant Professor C. L. ALLEN and Mr. MAXWELL.

Origin and development of the dairy breeds of cattle; care and management of the dairy herd; milk production; practice in judging and scoring.

3. **Swine.** Credit, one and one-half hours. Lectures, second six weeks of the winter course, T Th, 11. Animal Husbandry Building. Practice, W, 2–4.30. Animal Husbandry Pavilion. Assistant Professor HINMAN and assistants.

Types of swine, with their adaptations and breeds. The care and management of the farm herd. Fattening for market. Housing; range and forage crops. Practice in judging, with carcass work.

4. **Sheep.** Credit, one and one-half hours. Lectures, first six weeks of the winter course, T Th, 11. Animal Husbandry Building. Practice, W, 2–4.30. Animal Husbandry Pavilion. Assistant Professor HINMAN and assistants.

Selection, breeding, feeding, and management of the farm flock throughout the year. The breeds, with their special features. Fattening lambs and wethers. Simple features of sanitation and building. Wool grading.

5. **Beef Cattle.** Credit, one and one-half hours. Lectures, second six weeks of the winter course, T Th, 10. Animal Husbandry Building. Practice, F, 1–3. Animal Husbandry Pavilion. Assistant Professor HINMAN and assistants.

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

APPLICATION FOR ADMISSION TO WINTER COURSES

Remove this application without separating the pages

Print name clearly, using pen and ink or typewriter

Name of applicant IN FULL.....

Last name First name Second name

Permanent home address (number and street, or R. F. D.).....

Place.....*County*.....*State*.....

Date of birth, month.....*day*.....*year*.....

Nationality.....*Married*.....*Date of this application*.....

Name and address of parent or guardian, or person to be notified in case of serious illness or accident.....

.....

School or college attended (Indicate clearly the type of school or course).....

Name of school *Place* *Period of attendance*

.....

.....

.....

.....

Have you received any degree or certificate?.....*What?*.....*Where and when?*.....

(OVER)

What has been your practical experience in farm work and in the special work covered by the winter course in which you are registering?.....

.....

.....

What has been your residence and occupation during the past five years?.....

Occupation 1922.....*Place*.....*State*.....

Occupation 1923.....*Place*.....*State*.....

Occupation 1924.....*Place*.....*State*.....

Occupation 1925.....*Place*.....*State*.....

Occupation 1926.....*Place*.....*State*.....

What church do you attend?.....

REFERENCES.—I am personally acquainted with the above applicant, and know*.....*to be of good moral character, industrious, studious, and physically and otherwise capable.*

Name.....*Name*.....

Position.....*Position*.....

Address.....*Address*.....

*Two endorsements are necessary, and should be preferably by your teacher and your pastor or a public official, not a member of your own family. These persons should sign the application themselves.

Note.—The applicant must answer ALL the questions asked on both sides of this application blank. When the blank has been answered in full, mail it to Olin W. Smith, Secretary, College of Agriculture, Cornell University, Ithaca, New York.

Name.....

Last name First name Middle name

SCHEDULE OF SUBJECTS

IMPORTANT:—Before filling out the blanks on this page, make out a form such as is given on the reverse side.

Indicate by a check mark (√) the one of the following six courses in which you desire to register. Do not check more than one course.

1. *General Agriculture*
2. *Dairy Industry*
3. *Poultry Husbandry*
4. *Fruit Growing*
5. *Flower Growing*
6. *Vegetable Gardening*

If you desire to specialize in either the professional course in dairy industry or the professional course in poultry husbandry, it is not necessary or you to fill out the remainder of the blanks on this page.

If you are registering in any of the other four courses, write here the number and the name of each subject that you desire to take, using the number given in the catalogue. Example: No. 10, *Subject* Dairy Industry. *Without special permission, no student is allowed to take less than twelve or more than eighteen "hours" of work. For definition of "hour," see page 15.*

No.....*Subject Lecture, required of all students*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....
No.....*Subject*.....

After filling out this schedule completely according to directions, mail it, with your application for admission, to Olin W. Smith, Secretary.

(OVER)

THE SCHEDULE

Before filling out the previous page the applicant should make sure, by means of a form similar to the one shown below, that the subjects he desires do not conflict in time. Most of the courses offer options in laboratory periods, so that, with the exercise of care, one can generally arrange to include the subjects desired.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8–9						
9–10						
10–11						
11–12						
12–1						
1–2						
2–3						
3–4						
4–5						
5–6						

Breeds of beef cattle, with adaptations of each. The place of beef cattle in mixed farming. The management of a breeding herd throughout the year. Selection, buying, feeding, and marketing of feeders. Judging animals on foot and as carcasses.

6. **Horses.** Credit, one and one-half hours. Lectures, first six weeks of the winter course, T Th, 10. Animal Husbandry Building. Practice, F, 1–3. Animal Husbandry Pavilion. Professor HARPER and assistants.

Breeding, feeding, and care of farm work horses. Breeds of draft horses, their characteristics and adaptations. Judging. Common unsoundnesses.

DAIRY INDUSTRY

Students wishing to specialize in the manufacture of dairy products should enroll in the professional dairy course outlined on pages 23-27.

8. **Farm Dairying.** For students in general agriculture only. Four hours a week. Lecture and recitation, F 3–5. Dairy Building 120. Laboratory practice, S, 8–1. Dairy Building 209 and 128. Professor GUTHRIE and Assistant Professor MCINERNEY.

Composition and secretion of milk; the Babcock test for fat in milk and its products; the care and handling of milk; the manufacture of farm dairy products, including the operation of cream separators, the making of butter, starters, some of the farm cheeses, and ice cream; dairy arithmetic; ice harvesting; judging dairy products; scoring dairy barns.

ENTOMOLOGY

1. **Injurious Insects.** Two hours a week. Lectures, T Th, 3. Roberts 292. Professor HERRICK.

The common insect pests of farm, garden, and orchard are discussed, and measures of control are carefully considered. Specimens of the insects discussed, together with examples of their work, are shown to members of the class whenever possible. Opportunity is given for questions and discussions, with the hope of clearing up obscure points and the various phases of the problems. The lectures and discussions are illustrated by lantern slides and by charts.

EXTENSION TEACHING

1. **Oral Expression.** Two hours a week. Lectures and discussions, M W, 4. Roberts 131. Criticism by appointment, daily, 8–1, 2–5. Professor EVERETT and Mr. PEABODY.

Practice in oral and written presentation of topics in agriculture, with criticism and individual conferences on the technic of public speech. The course is designed to acquaint students with parliamentary practice, to encourage interest in public affairs, and to train for effective self-expression in public. Open to all students in the winter courses.

Special training will be given to competitors for the winter-course prize-speaking contest and debate. Competition is open to all winter-course students.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

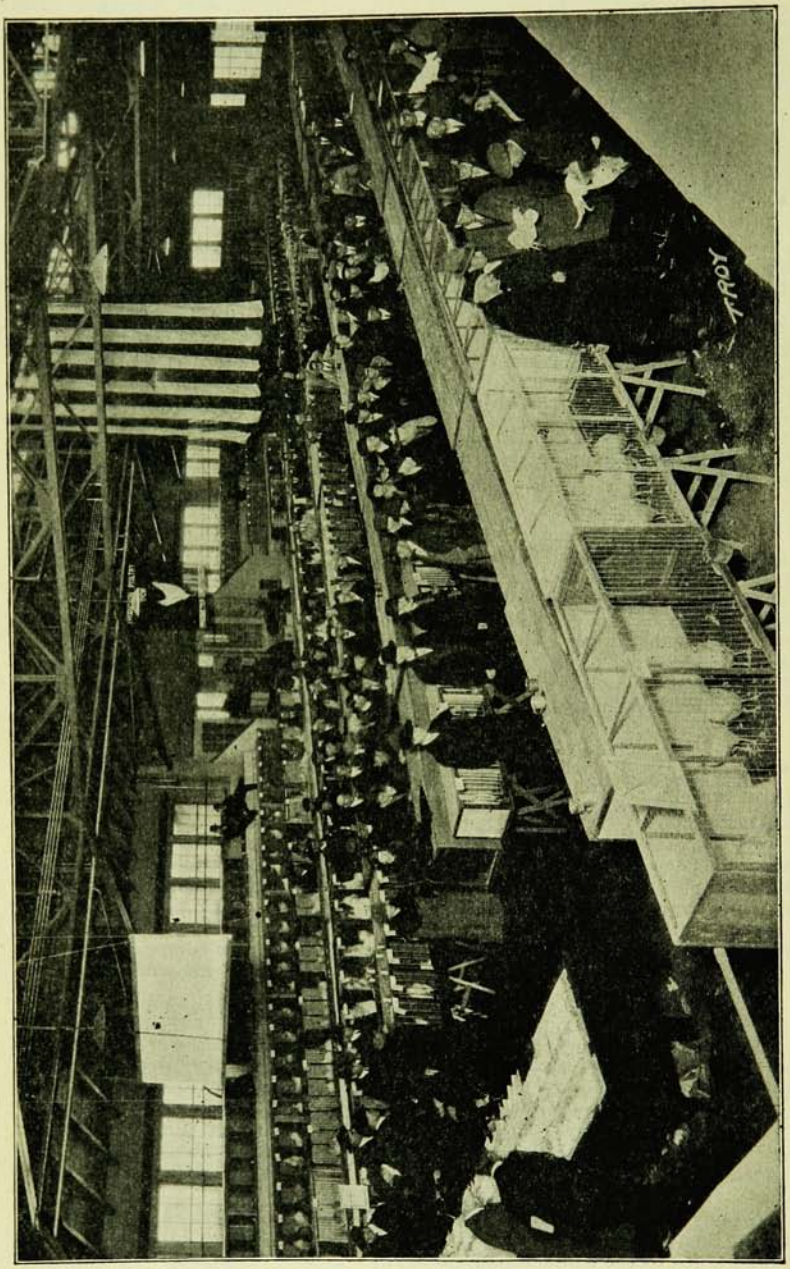
3. **Planning and Planting Rural Properties.** Four hours a week. Lectures M W, 3. Practice, M W, 10–1. Caldwell. Assistant Professor PORTER.

A discussion of the principles underlying simple arrangements and planting in home grounds, school grounds, and village-improvement work.

The course will consist of lectures to illustrate fundamental principles, and of practice and field trips to observe land conditions; making small surveys; preparing simple plans; learning the common plants, and utilizing them in planting practice.

4. **Woody Plant Materials.** Two hours a week. Lecture, T, 9. Practice, T, 10–1. East Roberts 7. Professor R. W. CURTIS.

A brief study of the characteristics and requirements of trees, shrubs, and vines for landscape planting.



THE NEW YORK POULTRY PRODUCTION SHOW IS HELD DURING THE WINTER COURSE SESSION

The practice and field trips enable students to recognize common woody plants. The lectures discuss planting areas, planting practices, and plant materials, the last named from the point of view of plants as elements in composition, in order that the student may learn to see plants not only as growing things but as possible units in planting design with which to improve our landscape environments. Laboratory fee, $1.

6. **Gardening and Garden Flowers.** Three hours a week. Lectures, M 8, W 9, F 11. Greenhouses. Miss MINNS.

A course designed to study the methods of propagation and growing of outdoor annuals and herbaceous perennials. Studies will be made, so far as possible, of individual garden problems. The culture of outdoor roses, asters, peonies, phlox, iris, and bulbous plants will be considered. Occasional laboratory periods, which are optional for the students, will be held. Laboratory fee, $1.

FORESTRY

1. **The Farm Woodlot.** One hour a week. Lecture, M, 10. Fernow 210. On three Saturday afternoons there will be field trips or laboratory periods. Extension Assistant Professor COPE.

This course is designed to present certain phases of forestry that are of value in farm work. The course covers the methods of identifying the principal trees of this region; the care of the woodlot, including tree planting for timber and windbreaks; thinning; cutting mature timber; methods of measuring the amount of standing and felled timber; protection from fire and other enemies; preservative treatment of posts; the making of maple sugar.

METEOROLOGY

1. **Elementary Meteorology.** Two hours a week. Lecture, M, 9. Laboratory, W, 9–11. East Roberts 341. Professor MORDOFF and Mr WEBBER.

This course is designed to present the more essential phases of meteorology and climatology and their relations to agriculture. Some time will be spent in studying the principles and methods of practical weather forecasting from weather maps and local observations.

PLANT BREEDING

1. **Plant Breeding.** Three hours a week. Lectures and discussions. T 9, Th 9–11. Fernow 210. Professor BUSSELL and Extension Assistant Professor LEWIS.

The course attempts to acquaint the student with the better-known facts of heredity, and with the methods and results of breeding work. Particular attention is given to the improvement of field crops and of ornamental plants. Methods applicable to the different types of plants as governed by mode of reproduction are discussed.

PLANT PATHOLOGY

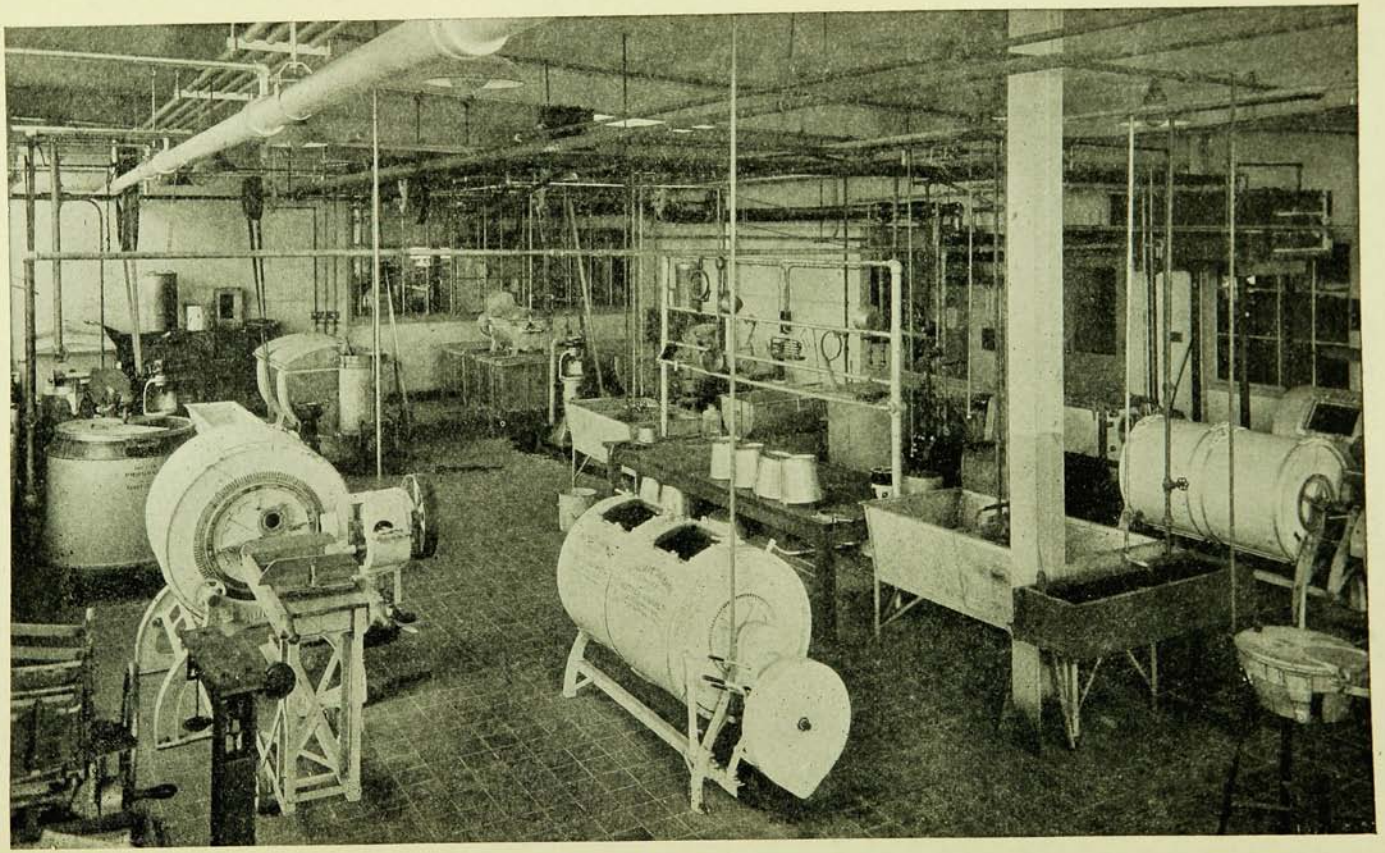
1. **Plant Diseases.** Three hours a week. Lecture, S, 9. Roberts Hall 292. Practice, Section A, T, 11–1; Th, 10–1; Section B, W, 11–1; F, 10–1. Bailey West Basement. Professor BARRUS and Extension Assistant Professor FERNOW.

The first three weeks will be spent in studying the structure and development of plants and of disease-producing organisms. The more important diseases of commercial crops will then be studied carefully in regard to their symptoms, cause, and control. Students will have an opportunity to select for study certain diseases in which they have a special interest. Laboratory assistance will be available during the scheduled practice periods, but the laboratory will be open for students at all times during the day. Laboratory fee, $1.50; breakage deposit, $3.

POMOLOGY

2. **General Fruit Growing.** Four hours a week. Lectures, M T W Th, 9. Roberts 292. Professor OSKAMP.

This lecture course is designed for students who desire a general knowledge of fruit growing. It covers practically the same topics as course 1 in fruit growing (page 29), but includes no laboratory work.



BUTTER MAKING LABORATORY

POULTRY HUSBANDRY

11. **Farm Poultry.** Four hours a week. Lectures, M W F, 5–6. Poultry Building 375. Laboratory practice, T, 10.30–1. Poultry Building 300. Professors RICE and BOTSFORD, Assistant Professors WEAVER, NORRIS, POWELL, and HALL, and Messrs. KRUM, HUTTAR, and Marble.

A discussion of the domestic breeds of poultry; hatching and rearing; the principles of breeding, feeding, and management; marketing; diseases of poultry; poultry houses; related matters. Laboratory fee, $3.

RURAL ENGINEERING

1. **Farm Mechanics.** Three hours a week. Lectures, T Th, 2. Dairy Building 218. Practice, Th or S, 10–1. Farm Mechanics Laboratory. Professor ROBB and Mr. WRIGHT.

A course dealing with knots and splices of ropes; shafts, pulleys, belts, and belt lacing; gasoline engines; pumps and water systems; care and adjustment of farm machinery. Laboratory fee, $2.

5. **Farm Shop Work.** Two hours a week. Lectures, demonstrations, and practice, T F, 10–1. Farm Mechanics Laboratory. Assistant Professor ROEHL.

Practice in carpentry, saw filing, tool sharpening, fitting handles, soldering, and cold-metal work. Study will be made of the plan and interior arrangement of the farm shop and of the selection, care, and use of the tools necessary for farm construction and general repair work. Laboratory fee, $2.

RURAL SOCIAL ORGANIZATION

1. **Rural Community Institutions and Problems.** Three hours a week. Lectures, T Th S, 8. Roberts 92. Acting Professor MELVIN.

This course deals with the various problems of the rural community. The problems of the home, school, church, economic organization of rural life, recreational standards and practices, social organizations, relationships within the community and to the outside, are analyzed. Special lectures and demonstrations in methods of play, recreation, and dramatics are given. Attention is given to the best practices which are being used in the solution of the various questions regarding rural life. Also, suggestions are offered for constructive community progress.

VEGETABLE GARDENING

2. **General Vegetable Growing.** Four hours a week. Lectures, M W F, 4. Poultry Building 174. Laboratory, S, 10.30–1. Vegetable Greenhouses. Assistant Professor SCHNECK.

This course is designed for students who desire a general knowledge of vegetable growing, and for those interested in the production of vegetables in home gardens. The lectures deal with planning and management of the vegetable garden, vegetable soils and fertilizers, growing early plants, special requirements of the important vegetable crops, and control of pests. The laboratory work consists chiefly of practice in plant growing in the greenhouses. Laboratory fee, $1.50.

VETERINARY MEDICINE

1. **Diseases of Dairy Cattle, and Veterinary Hygiene.** One hour a week. Lecture, S, 9. Veterinary College, Small Lecture Room. Doctor HAYDEN.

This course includes a discussion of the commonest diseases of dairy cattle, the prevention and cure of these diseases, ventilation of stables, and general questions of animal hygiene.

2. COURSE IN DAIRY INDUSTRY

The course in dairy industry is intended especially for persons who plan to operate commercial dairy plants, and students expecting to enter this field professionally should register in this course. The

work of the course requires the student's entire time. This course is not intended for persons who plan to follow dairy farming. Those wishing to study the manufacturing side of dairy farm work should register in the farm dairy course outlined on page 19. Neither is this course intended for persons preparing to occupy positions as herdsmen, or as testers in advanced registry work, or in cow-testing associations. Students wishing to qualify themselves for such work should take dairy industry course 8, animal husbandry courses 1 and 2 (page 18), and such other subjects as may be recommended by the faculty adviser.

In addition to the general expenses listed on page 11, students in dairy industry must meet the following charges:

SPECIAL EXPENSES

Laboratory fee, to pay in part for materials used and to cover laundry and breakage	$35.00
Books, about	15.00
One suit of blue overalls, about	3.00
Three white suits, with caps, about	10.00
One rubber apron, about	1.00

Waterproof footwear is necessary for work in the dairy laboratories. Books, notebooks, and the special clothing listed above can be purchased in Ithaca.

METHODS OF INSTRUCTION

Instruction, although partly by lectures and recitations, is largely by actual practice in the different kinds of dairy work. All of this work is given in the Dairy Building. The class assembles daily at 8 a. m., and the class work continues for two hours. Lectures and recitations are given in one-hour periods. Frequently they are replaced by examinations; often, also, a part of the hour is occupied by informal discussions of former lectures or of topics previously assigned for study. The lectures are supplemented by references to dairy literature, books, current periodicals, and experiment-station publications.

The students are then assigned, for the balance of the day, to different kinds of practice, the assignments being so made that in the course of the term each student has a due amount of work in each of the various divisions.

The first six weeks of the term will be occupied in studying the composition of milk, and methods of testing; the bacteriology of dairy products; dairy chemistry; dairy arithmetic; dairy mechanics; commercial starters.

NOTE.—Because the work of the professional dairy course is divided into two half-terms of six weeks each, a credit of one hour requires *two* lecture or laboratory periods a week during the half term.

REQUIRED SUBJECTS

The subjects of the required lecture and practice courses for the first half of the term are as follows:

200. **Milk Composition and Tests.** Credit three hours. Lectures, recitations, and laboratory practice. Professor TROY and Assistant Professor MCINERNEY.

This course includes the composition and secretion of milk; the Babcock test for fat in milk and its products, acid tests, salt tests, moisture tests; use of the lactometer; calculating milk solids; some of the simple tests for preservatives and adulterations. A thorough drill will be given in making all these determinations. The testing laboratory is furnished with all necessary equipment.

A limited amount of laboratory practice in the analysis of dairy products by the Mojonnier method will also be given. Special attention will be paid to the use of chemical balances and other laboratory apparatus.

201. **Dairy Bacteriology.** Credit two hours. Lectures, recitations, and laboratory practice. Professor SHERMAN and Mr. MYERS.

This course considers the nature of bacteria and their relation to dairy work, including their sources, action on milk, butter, and cheese, and the methods of controlling their growth.

The laboratory is equipped with modern apparatus for the preparation and sterilization of glassware and media, the plating of samples, and the incubation of organisms. Studies are made of the various bacteria commonly found in milk. Students are given practice in plating samples, counting organisms, and making microscopic examinations.

202. **Dairy Chemistry.** Credit one hour. Lectures and demonstrations. Mr. BATEMAN.

The elementary principles of chemistry are explained in order that the student may better understand the composition of dairy products and the chemical changes connected with and influencing dairy operations.

203. **Dairy Arithmetic.** Credit one hour. Professor GUTHRIE.

A thorough drill is provided in such problems as are constantly arising in all kinds of dairy work and in the keeping of factory accounts.

204. **Dairy Mechanics.** Credit two hours. Lectures, recitations, and laboratory practice. Messrs. AYRES and ————.

Students receive practice in the firing, care, and operation of boilers, and in the care and operation of steam engines, cream separators, refrigeration machinery, and other dairy equipment. Practical work is also given in the installation of shafts and pulleys, pipe fitting, belt lacing, and soldering.

205. **Starters.** Credit one hour. Practice, daily. Mr. AYRES.

Students will use various commercial cultures in the preparation of starters, and will study the best methods of control and the effects of different ripening temperatures.

ELIGIBILITY FOR THE SECOND HALF OF THE TERM

In the last half of the term, laboratory courses will be conducted in the manufacture of various dairy products, as listed subsequently.

Any student whose work in the first half of the term has been of satisfactory grade, may enroll in any of the courses offered which do not conflict as to time. For example, a student cannot choose the ice cream and the cheese courses, as they are given in the same period, and either subject will occupy his entire time. He may, however, elect the ice cream *or* the cheese course, and follow this with either the condensed and powdered milk, *or* the butter course.

These courses are open also to former students who have satisfactorily completed the work of the first half, and who wish to return and obtain additional training in dairy manufacturing lines

This privilege is extended also to persons who may already have received training elsewhere equivalent to the work of the first half of this course. Such persons will be expected to pass an entrance examination covering the subjects listed in the first half, as evidence of their fitness for admission; and a complete understanding between the candidate and the dairy department should be accomplished by correspondence before any move is made toward coming to Ithaca.

Fees covering enrollment of those not registered for the first half of the term will be: one-half of the laboratory fee, plus the full sum of the infirmary and Willard Straight Hall fees; and persons from other States will pay in addition one-half of the nonresident fee.

ELECTIVE SUBJECTS

The following courses will be given during the last half of the term:

January 3–13, inclusive

206. **Market Milk.** Credit three hours. Professor Ross and Mr. ————.

This course covers the sanitary construction of dairy barns; score cards for dairy barns and market milk; food value of milk; standardizing milk and cream; legal standards for milk and cream; dairy utensils; the general production and handling of clean milk.

The laboratory work includes bottling; milk pasteurization; different methods of cooling milk; clarification; standardization of milk and cream; judging milk and cream for sanitary quality; the use of the sanitary score card in judging dairy barns and dairy plants.

January 14–25, inclusive

207. **Ice Cream.** Credit, three hours. Assistant Professor PRICE and Mr. WESCOTT.

The subject matter covered in the lectures consists of the successive steps in the making of ice cream; it will include, also, allied subjects, such as types of machines; refrigeration; quality of materials used; marketing; business management; factory construction and equipment.

The laboratory is equipped with both hand and power freezers. There are two types of power freezers, one using ice for freezing and hardening, and one using mechanical refrigeration. Various kinds of ice cream are made, including custards and puddings. In the laboratory the student becomes familiar with the actual commercial business.

208. **Cheese.** Credit, three hours. Assistant Professor PRICE and Mr. HOCSTRASSER.

Instruction will be given in the principles underlying the making of the common types of both hard and soft cheeses; the commercial possibilities of these products and the marketing methods will be discussed. The making and use of starters, the judging of cheese, and the construction and equipment of cheese factories will also be considered.

The students will make a variety of these cheeses, including cheddar, cream, bakers', cottage, club, and the like.

The cheese room is equipped with all necessary apparatus, and all work is performed by students under direction of the instructor. Every detail of the methods employed is carefully observed and recorded by them on blank forms provided for the purpose.

January 26–February 5, inclusive

209. **Condensed and Powdered Milk.** Credit three hours. Assistant Professor PRICE.

This course considers the principles and practices of making condensed and powdered milk. Students will make sweetened condensed, evaporated, and superheated milk; and powdered whole milk, skimmilk, and buttermilk.

The laboratory is equipped with two types of condensing pans, sweetened condensed milk coolers, copper and glass-lined jacketed hot wells, homogenizer, filler, sterilizer, and shaker; and the necessary equipment for laboratory work connected with condensing.

210. **Butter.** Credit three hours. Messrs. AYRES and ————————.

This course deals with the principles and practice of butter making, from the receiving of the milk and cream to the judging and marketing of the finished product.

The creamery is furnished with apparatus such as is found in a well-equipped commercial plant. The milk is received, weighed, sampled, and separated, and the entire process of ripening cream and of churning is carried through in the most thorough manner. Every step of the work is performed by students under the close supervision of the instructor.

3. COURSE IN POULTRY HUSBANDRY

The winter course in poultry husbandry is one of the means by which the College of Agriculture attempts to meet the needs of farmers. The course is intended also to assist in supplying the large and growing demand for trained poultrymen to take charge of poultry plants owned by others. Although it is manifestly impossible in twelve weeks to give full preparation for so exacting a business as poultry keeping, this course will start the student in the right direction, enable him to avoid many mistakes, and offer him facts and principles of value gleaned from the lifelong experience, study, and observation of others. Persons expecting to take up poultry raising professionally should register in the course in poultry husbandry, not in the course in agriculture. Applicants must furnish satisfactory evidence of having had at least six months experience in working on an approved farm or poultry plant.

Prospective students who have not had experience may well plan to take a preliminary year in general agriculture, spending the intervening period in work on a poultry farm. The following is suggested as a program for the preliminary year, though it may in some instances be well to substitute vegetable gardening in place of pomology:

Agronomy 1 (page 18) 3
Agricultural Economics and Farm Management 1 (page 18) 2
Agricultural Economics and Farm Management 2 (page 18) 3
Pomology 2 (page 21) 4
Poultry Husbandry 11 (page 23) 4

A meeting of all winter-course students in poultry husbandry with the staff of the department will be held at five o'clock on the afternoon of registration day, November 3, in Poultry Building 375.

SPECIAL EXPENSES

Laboratory fee (to pay in part for material used) $12.00
General supplies 12.00
Excursions 50.00

Besides these expenses, about $5 worth of books are usually bought and retained by the student. For the cost of board and other expenses, see page 9. If the prospective student owns a set of drawing instruments, drawing board, triangles, and rulers, he should bring them and thereby save part of the expense for general supplies.

REQUIRED SUBJECTS

1. **Poultry Husbandry.** Six hours a week. Open only to students in the professional course. Lectures, M T W Th S, 9; F, 8.15, and by appointment. Poultry Building 375. Examination, W, 2–4. Poultry Building 300. Professors RICE and BOTSFORD, Assistant Professors WEAVER, NORRIS, POWELL, and HALL, and Messrs. HUTTAR and MARBLE.

The lectures include discussions of subjects of special interest to poultrymen; opportunities in poultry husbandry; advantages and disadvantages of various types of poultry keeping; laying out and estimating the cost of poultry plants; poultry-farm management; history and characteristics of breeds; feeding for egg production and for flesh; feeding young chickens; incubating and brooding; principles of poultry-house construction; capons and caponizing; diseases; preparing eggs and poultry for market; marketing poultry products. Assignments for reading will be announced.

2. **Special Lectures.** Two hours a week. Open only to students in the professional course. T Th, 4.45–5.45, and M W F, 4.45–5.45 for a period of approximately two weeks. Poultry Building 375, and elsewhere by appointment.

A course of lectures, not limited to the subject of poultry husbandry, given by members of the staff of many of the departments of the College of Agriculture and of the Cornell Medical College and by men of experience outside of the University.

3. **Laboratory Practice.** Four hours a week. Open only to students in the professional course. T W Th F S, 10–12.30; M F, 2–4. Poultry Building 300. Mr. ANDREWS and members of the staff.

This course includes the designing and drawing of plans for poultry buildings and colony houses; laying out poultry plants; selecting fowls for mating; killing, dressing, picking, and marketing poultry; testing, grading, and packing eggs; study of the formation and structure of the egg; anatomy of poultry; caponizing; study of poultry feeds, mixing rations; balancing rations; judging and scoring for fancy points and for production; sanitation.

5. **Flock Management.** One hour a week. Open to students in the professional course or to those who have taken or are taking course 11 (page 23). Practice periods and extra time arranged by appointment. Practice, reporting three times daily (including Sunday) for four weeks, 7.45–8.15, 12.30–1, 4–4.30. Poultry Plant. Mr. ANDREWS.

Practice in record keeping and management of fowls for egg production and for fattening.

6. **Poultry Mechanics and Appliances.** One hour a week. Open only to students in the professional course. Hours to be arranged. Poultry Building 125. Mr. KRUM.

Study of tools and making of shipping coops, catching hooks, and other poultry appliances. Practice in constructing buildings is usually given.

7. **Incubator Practice.** One hour a week. Open to students in the professional course or to those who have taken or are taking course 11 (page 23). Practice, reporting three times daily (including Sunday) for four weeks, 7.45–8.15, 12.30–1, 4–4.30. Poultry Building Basement. Mr. KRUM.

Practice in operating incubators, testing eggs, keeping records of incubation, and comparison of results.

8. **Brooder Practice.** One hour a week. Open to students in the professional course or to those who have taken or are taking course 11 (page 23). Practice, reporting three times daily (including Sunday) for four weeks, 7.45–8.15, 12.30–1, 4–4.30. Poultry Plant. Mr. KRUM.

Practice in the management of a brooder and a flock of chickens; keeping of temperature, food, and growth records.

9. **Poultry Accounts.** One hour a week. Open only to students in the professional course. M, 10–12.30. Poultry Building 300. Mr. HUTTAR.

Comparison of various methods of poultry-farm accounting, and practice in recording a set of transactions. A study will be made of the summarized results to determine the profit or loss in the various poultry-farm operations.

Excursions. One three-day trip will be taken, during the days immediately following the Christmas vacation, to visit successful New York State farms and the New York City markets. This trip is required, and every student must take it in order to receive full credit for the course. The total expense is approximately $50.

4. COURSE IN FRUIT GROWING

The course is intended to meet the requirements of persons engaged in commercial fruit growing. Lectures will cover the relation of the fundamental sciences to the various orchard operations, and a digest of experimental work bearing on fruit growing. Special emphasis will be placed on the interpretation of experimental work with reference to New York conditions. In the laboratory exercises each student will be given opportunity to perform all the orchard operations which the season will permit. The course should be of value to men who are preparing to become managers or foremen of fruit farms. Unless the student has had considerable previous experience, the course will not equip him for such a position.

Not more than twenty-five students can be admitted to this course unless some of the applicants have previously had work in plant pathology.

REQUIRED SUBJECTS

Students planning to attend but one winter session are required to take the subjects that follow. Those without experience in fruit growing had best plan a two-years program.

1. **Commercial Fruit Growing.** Six hours a week. Lectures, M T W Th, 9. Roberts 292. Practice, M W, 10–1. East Roberts 108. Professor OSKAMP.

This course includes a study of varieties and methods of propagation; principles of budding and grafting; soils, and planting plans for the orchard; cultivation; cover crops, fertilization, pruning, and thinning, as practiced in orchard management; picking, grading, packing, storing, and marketing fruit. The course considers the apple, pear, quince, cherry, plum, peach, grape, raspberry, blackberry, currant, gooseberry, and strawberry. Laboratory fee, $2.

	Hours
Plant Pathology 1 (page 21)	3
Entomology 1 (page 19)	2
Agronomy 1 (page 18)	3
Agricultural Economics and Farm Management 2 (page 18)	3

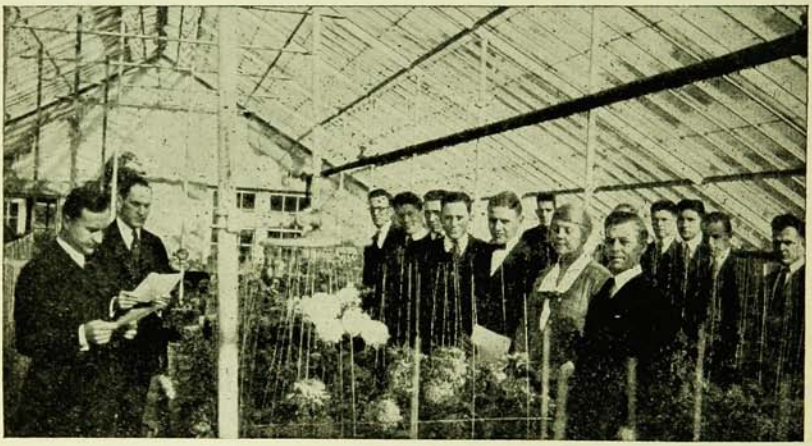
Students who can possibly do so should supplement these courses with the following courses in general agriculture in a preliminary or in a succeeding session:

	Hours
Agricultural Economics and Farm Management 1 (page 18)	2
Rural Engineering 1 (page 23)	3
Vegetable Gardening 2 (page 23)	3
Poultry Husbandry 11 (page 23)	4
Meteorology 1 (page 21)	2
Rural Engineering 5 (page 23)	2

Those who have had little or no experience in fruit growing are advised to take this work in a preliminary winter course, substituting Pomology 2 (page 21) in their schedules for one of the subjects here listed. By so doing, they will get a needed introduction to the subject and be better able to judge whether they desire the laboratory course.

5. COURSE IN FLOWER GROWING

New York is distinctly a flower-growing State. The financial interests of the industry are greater in this than in any other State in the Union. There is keen competition among flower growers, and progressive young men realize that they must equip themselves with all the information possible if they are to make a success of the business. Two courses are offered for those especially interested in commercial floriculture. These, with other required subjects, should give the student a broad knowledge of the subject and equip him well for his work.



CHRYSANTHEMUM STUDIES

Interest in flower growing, however, is not confined to men engaged in the commercial industry. There is an increasing demand from amateurs for information regarding the culture of plants to be used about the home or the school grounds. Courses have been arranged with a view to meeting this demand. These courses are outlined on page 19. Those following are planned especially for persons who intend to engage in commercial floriculture. Course 2 is equally well suited for those interested in vegetable forcing under glass.

REQUIRED SUBJECTS

1. **Commercial Floriculture and Greenhouse Practice.** Five hours a week. Lectures, W 8, Roberts 392; M 12, Th 2, F 8, Floriculture Building. Practice, S, 10–12.30. Greenhouses. Professors WHITE and NEHRLING.

A study of the methods of growing standard florist's crops, such as roses, carnations, violets, sweet peas, orchids, and plants for bedding. So far as possible, laboratory practice in growing these crops will be given. The course is designed to familiarize the student with the ordinary work of the greenhouse and the garden. Laboratory fee, $3.

2. **Commercial Greenhouse and Conservatory Construction and Heating.** Two hours a week. Lecture, T 2. Floriculture Building. Practice, Th, 11–1. Floriculture Building. Professor NEHRLING.

This course considers the details of the construction and heating of glasshouses for growing plants and vegetables; choice of location; water, soil, and light; glazing; all the conditions found in well-appointed modern ranges. The construction and care of hotbeds and coldframes are also studied. Laboratory work consists of drawings of construction details; the making of plans and specifications; preparation of estimates; and practical work in construction that may be available. Laboratory fee, $1.50.

	Hours
Agronomy 1 (page 18)	3
Plant Pathology 1 (page 21)	3
Entomology 1 (page 19)	2

ELECTIVE SUBJECTS

	Hours
Floriculture and Ornamental Horticulture 3 (page 19)	3
Floriculture and Ornamental Horticulture 4 (page 19)	2
Floriculture and Ornamental Horticulture 6 (page 21)	3
Plant Breeding 1 (page 21)	3

6. COURSE IN VEGETABLE GARDENING

With the rapid growth of cities and with vegetable food occupying a place of constantly increasing importance, the demand for vegetables has increased greatly during the past few years. An ever-increasing number of persons are looking to the growing of vegetables as a source of their income, particularly on specialized vegetable farms and in connection with other types of agriculture.

In view of this growing interest in vegetable culture, the Department of Vegetable Gardening offers the following course. This course is intended to meet the needs of persons who desire to obtain, in a short time, a fundamental knowledge of the principles and practices of commercial vegetable growing. The principles underlying successful vegetable production, storage, and marketing are discussed. Methods of applying these principles to different phases of vegetable gardening are described.

This course is designed especially for students who have had some farm experience. It should be of value to owners, and to those who plan to become managers or superintendents of specialized vegetable farms as well as to those who plan to grow or handle vegetables in a commercial way in conjunction with some other phase of agriculture, such as fruit growing or poultry husbandry.

Students without experience, but desiring some knowledge of either home or commercial vegetable gardening, will find the course described on page 23 suited to their needs.

VEGETABLE GARDENS, WITH THE COLLEGE OF AGRICULTURE IN THE BACKGROUND

The practice work for winter-course students is transferred to the laboratories and greenhouses

REQUIRED SUBJECTS

1. **Commercial Vegetable Growing.** Four hours a week. Lectures, M W F, 4. Poultry Building 174. Laboratory, S, 10–12.30. Vegetable Greenhouses. Assistant Professor SCHNECK.

A comprehensive survey is given of the vegetable industry as conducted in New York State. The problems of the market gardener, the vegetable forcer, the truck grower, the muck-land farmer, and the producer of canning crops are considered. Lectures are given on the principles of production and handling of vegetables under New York State conditions.

The laboratory work includes exercises in seed testing, plant growing, vegetable-variety studies, hotbed and coldframe construction and management, greenhouse fumigation, and soil sterilization. Plants are grown under glass as would be done for outdoor setting. Members of the class who desire may participate in a one-day excursion to Rochester, in January, to visit vegetable greenhouses; cost, about $9. Laboratory fee, $1.50.

Unless taken in a previous winter course, the following subjects must be included in the student's schedule:

	Hours
Agronomy 1 (page 18)	3
Entomology 1 (page 19)	2
Plant Pathology 1 (page 21)	3

At least one of the following courses must also be taken:

Agricultural Economics and Farm Management 1 (page 18)	2
Agricultural Economics and Farm Management 2 (page 18)	3
Plant Breeding 1 (page 21)	3
Rural Engineering 1 (page 23)	3
Meteorology 1 (page 21)	2

Those who expect to combine fruit growing with vegetable gardening should take the four required courses just listed and should add Pomology 1 (page 29). Similarly, those interested in poultry should add Poultry Husbandry 5, 7, 8, and 11 (pages 23 and 28).

A two-years program in vegetable gardening and fruit growing may be arranged as follows:

FIRST YEAR

	Hours
Agronomy 1 (page 18)	3
Agricultural Economics and Farm Management 1 (page 18)	2
Pomology 2 (page 21)	4
Vegetable Gardening 2 (page 23)	3
Rural Engineering 1 (page 23)	3

SECOND YEAR

Extension Teaching 1 (page 19)	2
Plant Pathology 1 (page 21)	3
Fruit Growing 1 (page 29)	6
Entomology 1 (page 19)	2
Agricultural Economics and Farm Management 2 (page 18)	3

The three lines of work, vegetable gardening, fruit growing, and poultry husbandry, may also be brought together in a two-years program, as follows:

FIRST YEAR

	Hours
Agronomy 1 (page 18)	3
Agricultural Economics and Farm Management 10 (page 18)	3
Poultry Husbandry 11 (page 23)	4
Poultry Husbandry, 5, 7, 8 (page 28)	3
Pomology 2 (page 21)	4

SECOND YEAR

Either	Hours
Vegetable Gardening 1 (page 33)	4
Pomology 1 (page 29)	6
Plant Pathology 1 (page 21)	3
Entomology 1 (page 19)	2
Or	
Poultry Husbandry 1, 2, 3, 6, 9 (pages 28 and 29)	14
with one of the following:	
Rural Engineering 1 (page 23)	3
Agricultural Economics and Farm Management 2 (page 18)	3

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This series of pamphlets is designed to give prospective students and other persons information about Cornell University. No charge is made for the pamphlet unless a price is indicated after its name in the list below. Requests for pamphlets should be addressed to the Secretary of the University at Ithaca. *Money orders should be made payable to* CORNELL UNIVERSITY.

The prospective student should have a copy of the

General Circular of Information

and a copy of one or more of the following Announcements:

Announcement of the College of Arts and Sciences.
Announcement of the College of Engineering.
Announcement of the Law School.
Announcement of the College of Architecture.
Announcement of the New York State College of Agriculture.
Announcement of the Winter Courses in the College of Agriculture.
Announcement of the New York State College of Home Economics.
Announcement of the New York State Veterinary College.
Announcement of the University Division of Education.
Announcement of the Department of Chemistry.
Announcement of the Graduate School.
Announcement of the Summer Session.
Announcement of the Summer Session of the Law School.
Announcement of the Summer School of Biology.
Program of the Annual Farmers' Week.
Annual Report of the President.
Special departmental announcements, a list of prizes, etc.

Other periodicals are these:

The Register, published annually in August, and containing, not announcements of courses, but a comprehensive record of the University's organization and work during the last year. Price, 50 cents.

Guide to the Campus. Illustrated. Price, 50 cents.

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